ENERGY POLICY UPDATE

MARCH 3, 2015

The Energy Policy Update Electronic Newsletter is published by the Arizona Governor's Office Of Energy Policy and is provided free of charge to the public. It contains verbatim excerpts from international, domestic energy, and environment-related publications that are reviewed by Community Outreach Personnel. For inquiries, call 602-771-1143 or toll free to 800-352-5499. To register to receive this newsletter electronically or to unsubscribe, email Gloria Castro.

CONTENTS

UPCOMING WEBINARS

Western Governors' Drought Forum Webinar Series:
Click here for more information or to register.

March 11**:** Tip of the Spear: The Horizon for Drought Data, Modelling, and Mapping Technology

March 25: Managing Forest Health for Water Resources

April 8**:** One Size Doesn't Fit All:

Like our Facebook page! Learn more about energy in Arizona, get daily posts on a variety of energy topics and use the Comment Section to tell us what you think or ask questions of our energy experts.

The Arizona Republic now has limited access. As such, links may or may not work.

ARIZONA–RELATED

As the River Runs Dry: The Southwest's Water Crisis

Arizona and the Southwest Seek a Balance of Growth and Water Conservation as Supply Continues To Decline.

LAS VEGAS – The patroller stopped his water district truck and grabbed his camcorder. "Here we go," he said, sliding from the cab and pointing his lens at the fine spray of water and rainbow rising from pop-up sprinklers on the lawn of a low-slung ranch home. "Thursday," he spoke, recording the day as evidence. No watering allowed on Thursdays. Welcome to the future, where every drop of Colorado River water is guarded and squeezed. Only here, in the city that gets 90 percent of its water from the fickle and fading river, the future is now. The vast and highly urbanized Southwest, built on the promise of a bountiful river propped up by monumental dams, is up against its limits. Already tapped beyond its supply, the river is now threatened by a warming climate that shrinks its alpine source. To support fast-growing urban populations in a time of dwindling supply, the Southwest is due for rapid and revolutionary changes. A region that uses two-thirds of its water outdoors, and mostly for agriculture, will have to find ways of sharing and boosting efficiency — a shift that many experts believe will mean city dwellers paying to upgrade rural irrigation systems. Cities such as Phoenix and Las Vegas, which have reduced their per-person water usage through better landscaping and appliances, will have to do better. They lag behind Los Angeles, whose growing population, by necessity, uses no more water than it did 40 years ago. Water suppliers from Denver to San Diego will spend billions of dollars to squeeze more out of each drop, and to clean and use wastewater and salt water. It means a future of higher water bills, further promoting conservation.

Asarco Christens Massive Solar Energy Farm

[Arizona Daily Star, Feb. 27] Tucson-based Asarco LLC christened a massive new solar-energy farm near its Mission Mine on Friday. A ribbon-cutting ceremony marked the beginning of commercial operations at the Pima Mine Road Solar Generating Facility, also known as the Avalon Solar Project, near Sahuarita. The 35-megawatt photovoltaic project on about 225 acres will supply power to Tucson Electric Power Co. under a 20-year contract, generating enough electricity to power more than 5,700 homes. Asarco, a major copper producer, says the project is one of the biggest such installations on a mining property. Clenera Renewable Energy developed the project and Panasonic Eco Solutions oversees the operations and maintenance. Coronal Group, an alternative-energy firm, is the operating manager of the plant.

ASU Launches Academy To Educate Young Students About Sustainability

[ASU News, Feb. 26] Today's students will become tomorrow's leaders, and educating them about sustainability is increasingly important in light of the complex social, economic and environmental issues the world faces. Arizona State University's new National Sustainability Teachers' Academy aims to bring teams of elementary, middle and high school teachers from across the nation together to establish an educational task force for sustainability. As a program of ASU's Rob and Melani Walton Sustainability Solutions Initiatives, the teachers' academy will focus on solutions-based curriculum with an emphasis on urban systems. ASU sustainability scientists and scholars will help coach and lead hands-on sessions on solutions

Why Variation in Hydrology and Legal Structures means that Drought Looks Different across the West
---

ENERGY STAR Webinars

U.S. Dept. of Energy Tribal Renewable Energy Webinar Series

U.S. Dept. of Energy Webinars

2015 UPCOMING EVENTS

RES Las Vegas
Mar. 9-12 Las Vegas, NV

Natural Gas Vehicles + Infrastructure
Mar. 10-11 Phoenix, AZ

GLOBALCON Conference & Expo
Mar. 17-18 Philadelphia, PA

Balance-Unbalance Int'l. Conference; Water, Climate, Place: Reimagining Environments
Mar. 27-29 Tempe, AZ

Arizona Science & Engineering Fair
Apr. 7-9 Phoenix, AZ

Tribal Economic Outlook Conference
Apr. 9 Flagstaff, AZ

Solar Summit 2015
Apr. 14-15 Phoenix, AZ

Utility Solar Conference
Apr. 27-29 San Diego, CA

CxENERGY 2015 Conference & Expo
Apr. 27-30 Las Vegas, NV

Alternative Clean Transportation (ACT) Expo
May 4-7 Dallas, TX

NARUC Utility Rate School - Western
May 11-15 San Diego, CA

Solar Power Generation Mexico
May 19-20
World Trade Center, Mexico

Better Buildings Summit
May 27-29 Washington, DC

Energy Efficiency Finance Forum
May 31-Jun. 2 San Francisco, CA

surrounding food, water, energy and climate.

EPA Approves Plan To Reduce Emissions at Power Plant

[Arizona Daily Star, Feb. 27] The U.S. Environmental Protection Agency has approved an alternative plan laid out by the Arizona Generation & Transmission Cooperatives (AzGT) to reduce the sulfur dioxide and particulate matter emissions at Arizona Electric Power Cooperative's Apache Generating Station, east of Benson. The plan, proposed in February 2013, requires the Arizona Electric Power Cooperative (AEPCO) to convert one of the station's two coal-fired units to natural gas and install upgraded emissions controls on both units, which will cost $32 million. That's far less than the $200 million estimated for the EPA's original Federal Implementation Plan, which called for the plant to install costly selective catalytic reduction technology on both of the units in an effort to reduce regional haze.

Rate-Setting Process, Other Big Issues Loom for SRP

[Az Republic, Mar. 2] Last week's meeting on Salt River Project's solar rates foreshadows some big debates ahead for the public utility. Representatives from the solar industry and from the large industrial customers said they were frustrated with the short time period between when SRP proposes a rate increase and the vote, which gives them limited opportunity to present alternatives. Stan Barnes, representing a group of large industrial businesses called Arizonans for Electric Choice and Competition that advocates for utility deregulation, said SRP has issues and he remains "highly dissatisfied" with its rate process. "We, your large industrial customers, feel we have not been heard," Barnes told the directors Thursday. "You have a real political problem." He said SRP's quick rate proceedings, which are dictated by legislation, might have been good for the public utility when Arizona was a growing state, but the proceedings need to be more inclusive today.

Rooftop-Solar Billing Issues Far From Settled

[Az Republic, Mar. 2] Salt River Project officials might have decided last week how much they want to charge customers with solar panels on their homes, but the debate over rooftop solar's value to the power grid and how it should be billed is far from settled in Arizona and across the country. SRP's elected leaders ended a contentious meeting Thursday by approving fees for those people who add solar after Dec. 8, 2014. The utility's 15,000 existing solar customers do not have to pay the fees. Rooftop solar still represents a tiny portion of the nation's overall power supply, but thanks to huge drops in the price to install solar and a 30 percent federal tax credit, the industry has been growing rapidly. That rapid growth is what has made the industry a target for new rates from SRP, Arizona Public Service Co. and utilities in several other states as customers generate their own power. Decisions by utilities such as SRP to hit them with higher rates might slow that growth temporarily but are unlikely to stop it, according to experts on both sides of the debate. Before SRP proposed its rate hike in late 2014, the company had more than 600 customers a month adding solar power, most through leases, and without the utility providing any incentives as it had in years past. As prices have fallen, SRP and other utilities have stopped paying those incentives as they no longer are needed, although a federal tax credit still is available.

'Slow Motion at the Speed of Light'

[UA News, Feb. 27] New technology developed by a collaboration between the UA and the University of California, Los Angeles, provides real-time monitoring of streaming video to optimize network traffic. Streaming video over the Internet is the main source of network traffic congestion. Similar to motor vehicle traffic, making real-time traffic information available leads to better utilization of highways and a smoother flow. Researchers at the University of California, Los Angeles, and the University of Arizona have developed new and improved technology capable of monitoring streaming data traffic in real time and taking action before interruptions occur. The rapid growth of streaming video and the varied nature of cloud-based applications place a burden on the optical networks that form the Internet. To provide a seamless user experience, these networks must be able to sense and monitor network conditions at any given time and be able to direct traffic in a nimble fashion to avoid traffic jams and gridlocks in data transmission. This, in turn, requires fast and accurate optical performance monitoring that can keep up with the rate of data transmission.

SRP Votes To Impose New Fees on Solar Customers, SolarCity Fights Back

[Fierce Energy, Mar. 1] Salt River Project (SRP) has voted to impose charges on new solar customers, while at the same time giving their current customers a break from charges -- at least for now. However, the move appears to bring the company one step closer to the threat

Industrial Energy Tech. Conference 2015
Jun. 2-5 New Orleans, LA

33rd West Coast Energy Mgmt. Congress
Jun. 3-4 Long Beach, CA

14th Annual Small Business Forum & Expo
Jun. 16-18 Phoenix, AZ

ASHRAE Annual Conference
Jun. 27-Jul.1 Atlanta, GA

ACEEE Summer Study on Energy Efficiency in Industry
Aug. 4-6 Buffalo, NY

Energy Efficiency Exchange: Federal Training & Knowledge
Aug. 11-13 Phoenix, AZ

Solar Power Int'l. 2015
Sep. 14-17 Anaheim, CA

2015 North American NGV Conference & Expo
Sep. 15-17 Denver, CO

ACEEE National Conference on Energy Efficiency as a Resource
Sep. 20-22 Little Rock, AR

World Energy Engineering Congress (WEEC)
Sep. 30-Oct. 2 2015 Orlando, FL

Greenbuild Int'l. Conference & Expo
Nov. 18-20 Washington, DC

Renewable Energy World Conference & Expo
Dec. 8-10 Las Vegas, NV

ASU Sustainability Series Events

Green Building Lecture Series
Scottsdale, AZ

of a lawsuit. SolarCity threatened to sue SRP for implementing the new charges, alleging the company is attempting to remove customers' choice of how they receive electricity. "Customers are smart," said SolarCity CEO Lyndon Rive in a letter to the SRP board. "A 96 percent drop in demand is compelling evidence that the price plan is an unabashed penalty on customers who want to go solar and a deliberate effort to stop new solar installations in SRP's territory. Customers know the new plan leaves them with no real choice. As a result, solar workers in SRP territory face serious uncertainty as to how long they will be able to earn a living." SRP's move also included a rise in rates for residential electric customers. According to SRP, the 3.9 percent increase was originally supposed to go into effect in April, but the board agreed to reduce that number to 3.3 percent until April 2016. The agreed-upon rise in rates comes out to around $3.85 in April 2015, and around $4.60 in April 2016.

ALTERNATIVE ENERGY & EFFICIENCY

ASHRAE/IES Publish Updated Standard on Energy Efficiency in Existing Buildings
[Energy Manager Today, Feb. 25] A newly revised standard from ASHRAE and IES seeks to provide greater guidance and a more comprehensive approach to retrofits of existing buildings for increased energy efficiency. Published this week, ANSI/ASHRAE/IES Standard 100-2015, Energy Efficiency in Existing Buildings, provides comprehensive and detailed descriptions of the processes and procedures for the retrofit of existing residential and commercial buildings in order to achieve greater measured energy efficiency. Appendices are included for life-cycle cost analysis procedures as well as identification of potential energy conservation measures. The standard addresses both residential and commercial buildings. It addresses single and multiple activity buildings with variable occupancy periods and identifies the approach for 53 building types in 17 climate zones/subzones. It identifies requirements for buildings undergoing retrofits that do not fall under the scope of either ANSI/ASHRAE/IES Standard 90.1-2013, Energy Standard for Buildings Except Low-Rise Residential Buildings, or ANSI/ASHRAE/IES Standard 90.2-2007, Energy Standard for Low-Rise Residential Buildings. Standard 100 directly addresses a building's energy-use efficiency in a quantitative manner and provides a means to improve that efficiency with an objective benchmark created with the assistance of the Energy Information Administration, the Federal Energy Management Program and Oak Ridge National Laboratory.

DOE To Help Tribes Advance Renewable Energy Projects
[Electric Light & Power, Mar. 2] The U.S. Department of Energy announced the third round of Strategic Technical Assistance Response Team (START) Renewable Energy Project Development Assistance, which provides federally recognized tribal governments and other tribal entities with on-the-ground support to accelerate clean energy project deployment. Through the START Program, the DOE Office of Indian Energy and Energy Department National Laboratory experts provide technical assistance for tribal clean energy development by supporting community- and commercial-scale renewable energy projects across the country. Since its launch in December 2011, the START Program has helped 21 tribal communities advance their clean energy technology and infrastructure projects — from solar and wind to biofuels and energy efficiency.

Google & SolarCity Partner on $750M Fund for Rooftop Solar
[Gigaom.com, Feb. 26] Google & SolarCity partner on $750M fund for rooftop solar Solar installer and financier SolarCity announced on Thursday that it plans to raise a $750 million fund to invest in installing solar panels on the rooftops of home owners, and $300 million of that fund will come from tech giant Google. While Google has put over $1 billion into clean energy projects over the years, the commitment to the SolarCity fund is Google's largest to date, and the entire fund will be the largest one ever created for residential solar projects. The deal shows the momentum behind the booming solar panel industry in the U.S. Solar energy represented over a third of all new electricity in the U.S. in 2014, and that could grow to 40 percent in 2015, which would be a new record. The solar industry is now a major U.S. employer, employing twice as many workers as the coal industry; SolarCity employs more workers in California than the state's three large utilities combined, said SolarCity CEO Lyndon Rive at the ARPA-E Summit earlier this month. This isn't the first time that Google has put money into a SolarCity fund. In the Summer of 2011, Google committed $280 million into a similar solar installation fund created by SolarCity. That collaboration was one of the first examples of a corporate entity (and not a bank) agreeing to invest in solar projects. Usually SolarCity works with banks like Citi, U.S. Bancorp, or Goldman Sachs to raise these types of funds.

Pacific Gas and Electric Pairs Education with Renewable Energy

[Fierce Energy, Feb. 26] Pacific Gas and Electric (PG&E) is supporting solar in California and preparing the next generation of energy workers with a $250,000 sponsorship that will provide sustainable energy project opportunities for several local high schools. Students will build portable solar units, participate in local sustainability projects and have the chance to make a global impact. PG&E's program, which encourages students to "act locally and think globally," includes a local community service sustainable activity component, as well as an international opportunity. Part of the program involves students' participation in local sustainability projects of their own choosing, such as park cleanups, water and energy conservation teams, or community gardens. PG&E will also provide 100 solar suitcase units (a small, portable photovoltaic lighting system, powerful enough to illuminate a small room) supplied by non-profit Green Tech to high schools throughout Northern and Central California. The schools will be trained by Green Tech on assembling the portable kits and will learn firsthand the basic principles of clean energy technical education.

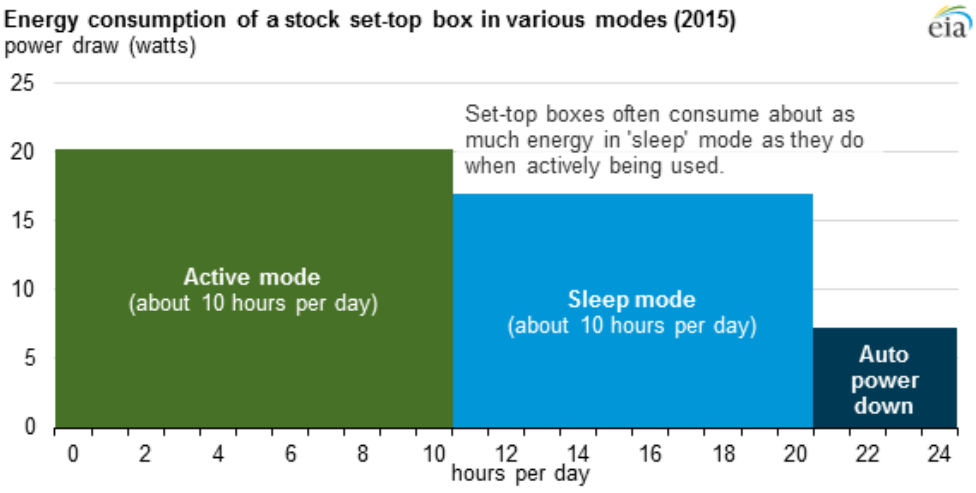
Proposal Would Allow Neighbors To Share Cost, Credit for Solar Projects

[Chicago Tribune, Mar. 3] In hopes of bringing solar energy to the masses, the Citizens Utility Board and Environmental Defense Fund on Tuesday announced a proposal to allow Illinois neighborhoods to invest in solar projects together and share in the compensation credits that result from the energy savings. The groups, which filed the proposal with the Illinois Commerce Commission last week, are proposing a three-year pilot program for ComEd customers that is essentially like neighborhood crowdfunding for solar energy. Currently, Illinois homeowners with rooftop solar panels receive compensation credits on their electric bills for surplus renewable energy they produce that is sent back to the power grid. About 300 customers in northern Illinois participate. A residential solar panel system in ComEd territory can offset an estimated 32 percent of annual consumption. Under the community solar proposal, a host customer, such as a school, business or home with space and location for solar panels, would recruit neighbors to invest in a solar project, and the neighbors would share in the compensation credits based on their level of financial investment.

USDA Announces $8.7M for Biomass Research

[Fierce Energy, Mar. 1] After the 2014 Farm Bill Program promised to generate more renewable energy and reduce forest fire threats, the United States Department of Agriculture (USDA) has announced another $8.7 million for the funding of bioenergy research and education. The fund will also help the publishing of the final rule for the department's program that provides incentives for farmers and forest landowners who plan to grow and harvest biomass for renewable energy. USDA Secretary Tom Vilsack announced the funding during the Growth Energy Executive Leadership Conference in Phoenix.

Voluntary Agreement Continues To Reduce Energy Consumption of Television Set-Top Boxes



Source: U.S. Energy Information Administration, based on Navigant Consulting, Inc. *Analysis and Representation of Miscellaneous Electric Loads in* NEMS
Note: Assumes set-top box has automatic power down enabled.

[Energy Information Administration, Mar. 2] About 85% of U.S. households have at least one set-top box (STB) designed to deliver subscription-based television service by cable, satellite, or other telecommunication signals, according to 2013 data from the National Cable & Telecommunications Association and the Consumer Electronics Association. In most cases, these STBs operate at almost full power whether they're actively being used or inactive. Energy efficiency advocates, set-top box manufacturers, service providers, and the federal government have voluntarily agreed to improve energy efficiency of set-top boxes, generally based on the ENERGY STAR program's product specifications. Some STBs consume about half of the electricity a typical refrigerator uses in a year, and households may have multiple STBs per household, making them a target for efficiency improvements. These devices are essentially never off, even when no one in the household is watching television or recording a program. Instead, they remain in a standby mode drawing nearly full power, often around 15-20 watts. Energy saving modes such as *deep sleep* are present on ENERGY STAR models but may or may not be enabled. Because STBs are typically supplied by service providers, consumers have little choice on what model of energy-consuming device is used. The increasing use of more-efficient *thin client* devices does help to offset some of the consumption for multiple STBs in a home. Similarly, video streaming devices such as the Apple TV and Roku consume only a fraction of the energy used by typical STBs.

ENERGY/GENERAL

AAA: Gas Price Increases Likely Through March

[The Hill, Mar. 2] The average price of gasoline has increased for 35 days in a row, AAA said on Monday, adding that even higher prices are expected. The 35-day increase, which totals to an additional 39 cents per gallon of gas, is the longest consecutive streak of rising prices since February 2013, the auto group said. The uptick in prices is attributed to rising crude oil costs and refinery maintenance. AAA said the nation's average price of gas is now $2.43 per gallon, a $1.03 less than what the average was one year ago.

Food Waste Is Becoming Serious Economic and Environmental Issue, Report Says

[New York Times, Feb. 25] WASHINGTON — With millions of households across the country struggling to have enough to eat, and millions of tons of food being tossed in the garbage, food waste is increasingly being seen as a serious environmental and economic issue. A report released Wednesday shows that about 60 million metric tons of food is wasted a year in the United States, with an estimated value of $162 billion. About 32 million metric tons of it end up in municipal landfills, at a cost of about $1.5 billion a year to local governments. The problem is not limited to the United States. The report estimates that a third of all the food produced in the world is never consumed, and the total cost of that food waste could be as high as $400 billion a year. Reducing food waste from 20 to 50 percent globally could save $120 billion to $300 billion a year by 2030, the report found. “Food waste is a global issue, and tackling it is a priority,” said Richard Swannell, director of sustainable food systems at the Waste and Resources Action Program, or Wrap, an antiwaste organization in Britain that compiled the new report. “The difficulty is often in knowing where to start and how to make the biggest economic and environmental savings.”

Time-Variant Electricity Pricing Offers Benefits, So Why Isn’t It Widespread?

[Energy Manager Today, Mar. 3] Today, most residential electricity customers are charged the same price regardless of when the electricity is actually being used. Charging customers a uniform price for electric service looks a bit like buying groceries by the cart instead of by the items purchased (e.g., apples versus filet mignon) – simple, to be sure, but so riddled with inefficiencies that no one would actually propose operating a supermarket that way. A cartful of filet mignon may weigh the same as a cartful of apples, but the value of these items and the cost of bringing them to market is drastically different. Similarly, electricity costs differ depending on the time of day power is produced and delivered. Time-variant electric pricing addresses this issue by charging customers different prices depending on when electricity is used, reflecting the true costs of producing and delivering electricity. This gives customers greater control over their electricity bills by allowing them to reduce their energy use at higher-cost times. A recent article by my colleague, economist Beia Spiller, explained how time-variant electricity pricing can benefit customers, utilities, and the environment, and described several different types of time-variant pricing. Given its compelling economics, one would think time-variant pricing would be widespread. Part of the reason it’s not is sheer inertia, but there’s

more to it than that. **What would it take to fix this?** Changing the paradigm, first and foremost, requires technology that supports a more specific pricing signal. The most straightforward approach entails widespread introduction of advanced, or smart meters, which collect detailed electricity use data. Traditional electricity meters measure the gross amount of electricity that passes through them from the time they are plugged in until they are taken out of service. Typically, about once a month, a reading is taken and the difference between each reading and the prior reading is deemed to be the amount of electricity used for the billing period. The bill is calculated by multiplying this amount by rates that stay consistent throughout the billing period. In order to apply different prices during different times within the same billing period, you need a meter that can distinguish among these sub-periods, or 'intervals.' The more targeted you want the pricing to be, the smaller the intervals need to be. Simply put, time-variant utility rates cannot exist without this technological prerequisite. The good news is we're making progress. According to a recent federal report, slightly more than 30 percent of residential customers have advanced meters. The bad news is that having the right meters is not enough. As discussed in a blog post on Energy Exchange and a recent article in the *Washington Post*, the presence of smart meters doesn't automatically mean time-variant pricing is available. Introducing time-variant pricing requires the utility company to have complementary technology, such as modern billing systems capable of calculating and delivering complex bills to residential customers.

US Running Out of Room To Store Oil; Price Collapse Next?
[Associated Press, Mar. 3] NEW YORK — The U.S. has so much crude that it is running out of places to put it, and that could drive oil and gasoline prices even lower in the coming months. For the past seven weeks, the United States has been producing and importing an average of 1 million more barrels of oil every day than it is consuming. That extra crude is flowing into storage tanks, especially at the country's main trading hub in Cushing, Oklahoma, pushing U.S. supplies to their highest point in at least 80 years, the Energy Department reported last week. If this keeps up, storage tanks could approach their operational limits, known in the industry as "tank tops," by mid-April and send the price of crude — and probably gasoline, too — plummeting. "The fact of the matter is we are running out of storage capacity in the U.S.," Ed Morse, head of commodities research at Citibank, said at a recent symposium at the Council on Foreign Relations in New York. Morse has suggested oil could fall all the way to $20 a barrel from the current $50. At that rock-bottom price, oil companies, faced with mounting losses, would stop pumping oil until the glut eased. Gasoline prices would fall along with crude, though lower refinery production, because of seasonal factors and unexpected outages, could prevent a sharp decline.

INDUSTRIES AND TECHNOLOGIES

Apple Enters Electric Car Market with Minivan-like "Titan"
[Science Times, Mar. 1] What question would you ask if you heard that Apple Company was busy working on a project? Probably, the question would be; another phone? A laptop, or is it a tablet perhaps? Then I would answer and tell you that you are wrong because it's none of the above. Apple Company is working on an electric car project! The project is actually one year old since it was approved by the CEO Tim Cook. According to The Wall Street Journal, it is claimed that Apple has hired hundreds of experts from the industry of Automotives towards the creation of the electric vehicle which has a design resembling that of a minivan. Rumor has that with the new vehicle, which looks a bit like a minivan and is code-named "Titan", Tesla will have a run for its money. It is also said that Apple has poached many experts from other companies to work for the new project. The leader of the group Steve Zadesky, who happens to be the product designer, was given a go-ahead of creating a 1,000 team and the permission to poach employees. According to the Financial report, Apple has hired the CEO of Mercedes-Benz Research and Development alongside other employees. It was reported that Apple was in a lock with Tesla for trying to poach some of its employees. Apple seems really determined with succeeding in this as it is claimed to have met with manufacturers that produce high end vehicles.

Carmakers Find That Turbos Are A Powerful Path to Fuel Efficiency
[New York Times, Feb. 26] Even as electric cars stall with Americans, another fuel-saving technology is revolutionizing the morning commute: the turbocharger. Once mostly the province of expensive sports and luxury cars, turbochargers are proliferating in everything from budget compacts to burly pickup trucks. As automakers scramble to lift their average fuel

economy to 54.5 miles per gallon by 2025 — the target set by the Environmental Protection Agency — turbochargers have become a key to unlocking higher mileage without sacrificing the performance consumers demand. In the process, analysts say, their efficiency has had the unintended effect of helping slow the broader adoption of alternative-fuel vehicles. How does it work? A turbocharger essentially reuses hot exhaust gases — energy that would otherwise be wasted — to increase engine power in a smaller space. Hot exhaust spins a turbine wheel at up to 250,000 r.p.m., which compresses air and stuffs it into engine cylinders, allowing more fuel to be burned in a same-size engine. That allows automakers to shrink engines, using six cylinders instead of eight, or four in place of six, while matching the power of the larger traditional engine. The downsized engines also beat their larger counterparts in low-end torque, a boon to effortless acceleration.

Energy Department's Oak Ridge National Laboratory Unveils New Crowdsourcing Website for Building Technologies

[Energy.gov, Mar. 2] As part of the Energy Department's efforts to improve the energy efficiency of the nation's homes and buildings, lower energy costs, and enhance U.S. competitiveness in manufacturing, the Energy Department today launched the new Buildings Crowdsourcing Community website. Administered by the Department's Oak Ridge National Laboratory (ORNL), the new site,buildings.ideascale.com, will help technology innovators collect, share and evaluate input from customers and other stakeholders about next-generation building technologies. Innovators including start-ups, designers, buildings scientists, and students can use the website to share ideas that could develop into new energy efficient technologies for homes and buildings. Those interested in participating can register through the ORNL Buildings Crowdsourcing Community or they can vote on their favorite entries. The best ideas will be recognized during the Energy Department's Building Technologies Office Industry Day hosted at ORNL in September. Starting today, the ORNL Buildings Crowdsourcing Community will begin accepting new idea submissions, comments, and votes and submissions. The website will stay open until May 31 at 11:59 p.m. EST. Site members and users can still view the submissions, comments, and votes after May 31, but participation on the site will end after the submission timeframe expires.

High-Performance Flow Battery Could Rival Lithium-Ions for EVs and Grid Storage

[Gizmag.com, Feb. 27] A new redox flow battery designed at the Pacific Northwest National Laboratory (PNNL) more than doubles the amount of energy that this type of cell can pack in a given volume, approaching the numbers of lithium-ion batteries. If the device reaches mass production, it could find use in fast-charging transportation, portable electronics and grid storage. A flow battery is formed by two liquids with opposite charge (electrolytes) which turn chemical energy into electricity by exchanging ions through a membrane. The electrolytes are stored in two external tanks and this makes the system easy to scale up, potentially very quick to charge (the electrolytes can simply be replaced) and resistant to extreme temperatures. These perks have already inspired some radical concept car designs but if these dreams are going to come to fruition, flow batteries will need to get over one big hump: currently, the best flow cell out there only packs less than a third of the energy per unit volume as a lithium-ion battery. Because of this, flow cells are mainly used where space is not at a premium, such as to store large amounts of energy from renewable sources in open spaces. Still, even in this arena, a more energy-dense flow cell could turn out to be very useful, improving the reliability of the electric grid in a tight urban setting, and perhaps even challenging the upcoming lithium-ion home batteries announced by Tesla.

'Largest Ever' U.S. Energy Storage System Takes Shape

[GreenBiz.com, Feb. 23] Energy storage specialist Alevo Group has announced plans to deliver the largest U.S. energy storage deployment to date, after signing a deal to provide 200MW of capacity. The company, which emerged from stealth mode last autumn with news that it had raised around $1 billion to support the development of its advanced battery technology, revealed that it has signed a deal with energy services firm Customized Energy Solutions (CES). The joint operational agreement will see the two companies work together to provide 200MW of grid frequency regulation services to the wholesale power market through Alevo's GridBank energy storage systems. These are 2MW capacity batteries stored in shipping containers. Alevo said that the deal will allow CES to provide energy storage-based frequency regulation services to its customer base in the U.S. and Canada, and "represents the largest ever energy storage deployment in the U.S."

LEGISLATION AND REGULATION

EPA Tackles Emissions From Refrigerators, Air Conditioners
[The Hill, Mar. 2] The Environmental Protection Agency (EPA) is looking to cut down on emissions from refrigerators. The EPA announced recently it is approving the use of new "climate-friendly" refrigerants that could replace those already in use in refrigerators and air conditioners. This comes as part of the Obama administration's climate action plan. The new rule will affect household refrigerators and freezers, restaurant refrigerators, and room air conditioners, the EPA noted. "Today's rule is an example of how we can turn the challenge on climate change into an opportunity to innovate our way to a better future," EPA administrator Gina McCarthy said. The new rule is intended to better protect public health and the environment.

Parties Argue Clean Power Plan Legality At Federal Appeals Court
[Power Engineering, Mar. 2] The nation's largest coal producer, Peabody Energy (NYSE: BTU), filed comments on Feb. 27 at a federal appeals court about the constitutional issues posed by the U.S. Environmental Protection Agency's proposed Clean Power Plan. Peabody is offering the arguments of noted law professor Laurence Tribe that the Clean Power Plan is an unconstitutional overreach of authority that Congress previously granted to the agency under the Clean Air Act. The underlying lawsuit was filed in August 2014 at the U.S. Court of Appeals for the D.C. Circuit by Murray Energy, a major coal producer based in Ohio. In part, Peabody in the Feb. 27 filing was responding to arguments raised by the Natural Resources Defense Council (NRDC). Said Peabody: "NRDC asserts that it would be 'improper' for this Court to reach the constitutional objections raised by Peabody (including the Fifth Amendment). But the only way this Court can avoid reaching those objections is to construe EPA's statutory authority narrowly enough so that EPA's actions do not raise them. That is precisely what Peabody urges: this Court should hold that the Clean Air Act prohibits the Proposed Rule."

EU Unveils Vast Plan To Merge 28 Energy Markets
[Associated Press, Feb. 25] BRUSSELS (AP) — The European Union's executive has unveiled a vast plan to boost coordination between the EU's 28 national energy markets to wean Europe off unstable Russian gas supplies and provide cheaper energy for consumers. European Commission Vice President Maros Sefcovic on Wednesday called it "undoubtedly the most ambitious energy project" since the inception of the EU over half a century ago. It will include improving links across borders in Europe's oil, gas and electricity grids and investing in new sources of energy from North Africa and Turkey. Sefcovic said that could save businesses and consumers up to 40 billion euros ($45.4 billion) a year and, by diversifying energy sources, increase the EU's political options in eastern Europe. Europe imports 40 percent of its natural gas from Russia, half via pipelines through conflict-torn Ukraine, and it could to take years of investment to reduce that dependency. Ukraine and Russian energy monopoly Gazprom have been embroiled in numerous gas price wars, which have hit supplies in Europe over the past years.

WESTERN POWER

Austin Mayor Steve Adler, Tech Companies and Nonprofits Announce Project To Make Community First! Village the World's First Community Powered by Crowdsourced Energy
Austin's Mayor, leading Central Texas technology companies -- including Gridmates, a visionary startup addressing energy poverty, and nonprofits focused on sustainability are announcing a campaign to create the world's first community powered by crowdsourced energy. Gridmates is the first Internet platform designed to eliminate energy poverty by enabling peer-to-peer energy sharing.
[PR Web, Mar. 2] Austin, TX – Austin Mayor Steve Adler, leading Central Texas technology companies – including Gridmates, a visionary startup addressing energy poverty, and nonprofits focused on sustainability today are announcing a campaign to generate donations of electricity for powering Community First! Village during its initial year of operation. The campaign will create the world's first community powered by crowdsourced energy and help improve quality of life for village residents. Scheduled to open in Spring 2015, Community First! Village is a 27-acre master-planned community in Southeast Austin that will provide affordable, sustainable housing and a supportive community for approximately 240 disabled, chronically homeless people. The village is a project of Mobile Loaves & Fishes, a social outreach ministry that provides food and clothing and promotes dignity to homeless people in Central Texas.

Mobile Loaves & Fishes and Austin startup, Gridmates, are facilitating the energy sharing campaign benefitting Community First! Village. Gridmates is the world's first Internet platform designed to eliminate energy poverty by enabling peer-to-peer energy sharing. Energy poverty occurs when people cannot afford to pay for electricity and other utilities.

California American Water Customers Reduce Water Usage by 21 Percent

[Fierce Energy, Mar. 3] In 2014, California American Water customers in the Sacramento District reduced their water usage by nearly 21 percent -- 20.9 to be exact. The state is in its fourth year of a historic drought. The resulting water conservation was the result of a call, in March 2014, by California American Water for a 20 percent reduction in water use in accordance with Governor Jerry Brown's emergency drought declaration and the California Public Utilities Commission's (CPUC) Rule 14.1 that called on customers to restrict non-essential uses of water. "California American Water customers in the Sacramento region deserve credit and recognition for their great work reducing water usage in 2014," said California American Water Director of Operations Audie Foster. "In fact, they saved over 2.4 billion gallons of water last year."

Colorado House Kills Senate Bill To Rollback Renewable Energy Standard

[The Denver Post, Mar. 2] A House committee on Monday killed legislation that would have cut in half the requirement that the state's largest utilities get 30 percent of their power from wind, solar and other renewable sources by 2020. Senate Bill 44 also would have reduced the standard for rural electricity associations from 20 percent to 15 percent starting in 2020. The bill died on a party-line 6-5 vote, with Democrats in opposition to the rollback.

New Mexico Utility Adding Wind, Solar and Geothermal to Its Power Mix

Utility-scale solar projects being built at various locations

[Renewable Energy World, Mar. 2] Public Service Co. of New Mexico parent PNM Resources (NYSE: PNM) said in its Feb. 27 annual Form 10-K report that its utility subsidiary is gradually adding more renewable energy to its portfolio. The utility (called "PNM" in the filing), for example, has a 20-year agreement to purchase energy and renewable energy credits (RECs) from the Lightning Dock Geothermal facility built near Lordsburg, N.M. The facility, which is the first geothermal project for the PNM system, began providing limited power to PNM on Jan. 1, 2014. The current capacity of the facility is 4 MW and future expansion may result in up to 10 MW of generation capacity.

SDG&E Introduces Loaner Program for Smart In-Home Devices

[Fierce Energy, Feb. 24] San Diego Gas & Electric (SDG&E) has launched a loaner program for home area network (HAN) devices, "in efforts to help customers make smart energy choices and save money." The program will allow customers to borrow the display devices for use in their home -- at no cost -- to help them understand their energy usage. According to SDG&E, the customers will see "near-real time" information and energy costs from the devices. The devices will be free for 30 days, at which time the customer can decide if the benefits of the device is worth continuing the service. Early on in their testing of in-home devices, SDG&E found that residential and small commercial customers -- 20 MW or less -- were the ones who would benefit most from the program. "The option for customers to borrow an in-home display at no cost is an important step for us to ensure we are making it easy for our customers to have access to innovative technology that will ultimately help them reduce their energy bills. This is increasingly important as the cost of energy continues to rise," said Caroline Winn, SDG&E's vice president of customer services and chief customer privacy officer. "I can speak from personal experience that my in-home display has been very useful to understand my own energy usage and I'm confident many of our customers can benefit from this tool as well." As part of their smart grid deployment, SDG&E also launched a Reduce Your Use program. The company allows residential customers to sign up to receive alerts. During an event, if a customer receives an alert and reduces their energy usage, they are eligible to receive a bill credit.

The Hyperloop Could Be A Futuristic California City's Public Transit

[Gigaom.com, Feb. 26] A county halfway between San Francisco and Los Angeles would be one of the first sites to host a hyperloop track under a plan revealed today by Hyperloop Transportation Technologies, an organization that has been working to make the futuristic form of transportation a reality since it was announced by Elon Musk in 2013. Hyperloop Transportation Technologies, which is not affiliated with Musk, signed a deal with developers for a tract of land in Quay Valley, California, where developers have proposed a 150,000-

person city powered entirely by solar panels. It plans to begin building a five-mile test hyperloop track next year. It is scheduled to start running in 2019. “With Quay Valley, we’re creating a community built on economical, environmental and social sustainability, and part of this is seeking to reduce car dependency,” Quay Valley developer GROW Holdings’ CEO Quay Hays said in a release. “For these reasons, the Hyperloop is the ideal clean community transit system for Quay Valley.” Musk’s hyperloop design calls for capsules large enough to carry passengers that pass through a steel tube at up to 800 miles per hour. The high speed is made possible by creating a near-vacuum in the tube, reducing drag. “It’s like getting a ride on Space Mountain at Disneyland,” Musk told Businessweek in 2013. “It would have less lateral acceleration — which is what tends to make people feel motion sick — than a subway ride, as the pod banks against the tube like an airplane. Unlike an airplane, it is not subject to turbulence, so there are no sudden movements. It would feel super smooth.” Hyperloop Transportation Technologies plans to pay for the test track with funds raised via an IPO later this year. It estimates it will need $100 million for construction.

ARIZONA STATE INCENTIVES/POLICIES

ARIZONA COMMERCE AUTHORITY (ACA)

- **INCENTIVES**

Arizona has lowered taxes, streamlined regulations, and established a suite of incentives to support corporate growth and expansion. The Arizona Competitiveness Package, groundbreaking legislation adopted in 2011, makes it easier for existing Arizona companies to prosper and establishes Arizona as one of the most desirable places for expanding companies to do business. Give your company a competitive edge by utilizing Arizona’s incentives.

- Job Training
- Quality Jobs
- Qualified Facility
- Computer Data Center Program
- Research & Development
- Foreign Trade Zone
- Military Reuse Zone
- Angel Investment
- Renewable Energy Tax Incentive
- Healthy Forest
- Sales Tax Exemption for Machinery and Equipment
- Lease Excise
- Additional Depreciation
- Work Opportunity
- Commercial/Industrial Solar
- SBIR/STTR
- Private Activity Bonds
- QECB’s

- **(ACA) PROGRAMS**

- **DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY (DSIRE)**

- Arizona Incentives/Policies
- Federal Incentives/Policies
- Solar Policy News

DSIRE provides summaries of current solar policy developments and an archive of past solar policy developments. Current solar news appears below the news archive, which is searchable by several criteria.

GRANTS

Students – Geothermal Resources Council (GRC) – The GRC presents news and information for students in the global geothermal community. There are some great opportunities for student scholarships in geothermal. For more information, visit the link below. You will find "Scholarships" half way down the page.

Website: http://www.geothermal.org/students.html
The following solicitations are now available:
(Click on title to view solicitation)

- Planning Program and Local Technical Assistance Program (EDAPLANNING2012)– Applications Accepted on a Continuous Basis
- Environmental Quality Incentive Program - Applications Accepted on a Continuous Basis
- EPA-EE-14-02 - Environmental Education Local Grants Program – Close Date: 3/06/2015
- Physics of Reliability: Evaluating Design Insights for Component Technologies in Solar 2 (PREDICTS2) – Close Date: 3/12/2015
- Water Resources Research National Competitive Grants Program (G15A00019) – Application due March 12, 2015
- NEW – DUE SOON! Economic Development Assistance Programs (EDAP2015)– Applications due March 12, 2014 and June 15, 2015
- NEW – DUE SOON! Beginning Farmer and Rancher Development Program (USDA-NIFA-BFR-004835) – Applications due March 13, 2015
- Sustainable and Holistic Integration of Energy Storage and Solar PV (SHINES) Close Date: 3/19/2015
- NEW – DUE SOON! Network Optimized Distributed Energy Systems (NODES) program (DE-FOA-0001289) – Concept Papers due March 20, 2015
- NEW! Agricultural Water Conservation and Efficiency Grants Fostering District/Farmer Partnerships (R15AS00030) – Applications due March 24, 2015
- NEW! Offshore Storage Resource Assessment (DE-FOA-0001246) –Applications due March 26, 2015
- NEW! Transitional Technology Development to Enable Highly Efficient Power Systems with Carbon Management (DE-FOA-0001238) –Applications due March 30, 2015
- NEW! Agriculture and Food Research Initiative - Agriculture and Natural Resources Science for Climate Variability and Change Challenge Area (USDA-NIFA-AFRI-004919) – Letter of Intent due April 2, 2015
- NEW! American Indian Air Quality Training Program (EPA-OAR-IO-15-03) – Applications due April 3, 2015
- NEW! Agriculture and Food Research Initiative - Water for Agriculture Challenge Area (USDA-NIFA-AFRI-004918) – Letters of Intent due April 9, 2015
- NEW! Agriculture and Food Research Initiative - Water for Agriculture Challenge Area (USDA-NIFA-AFRI-004918) – Letters of Intent due April 9, 2015
- NEW! Near Zero Power RF and Sensor Operations (DARPA-BAA-15-14)– Applications due April 23, 2015
- Solar Powering America by Recognizing Communities (SPARC) Funding Number: DE-FOA-0001241 – Concept Paper Submission Deadline: 3/5/2015 5:00 PM ET; Full Application Submission Deadline:4/27/2015 5:00 PM ET; Webinar Information: Date: February 18, 2015 Time: 4:00pm Eastern Register here: https://attendee.gotowebinar.com/register/3005409845756656642
- Desalination and Water Purification Research and Development (DWPR) (R15AS00019) – Application Due Date: 4/27/2015

- Desalination and Water Purification Research and Development (DWPR) Pilot (R15AS00021) – Application Due Date: 4/27/2015
- American Apprenticeship Initiative (FOA-ETA-15-02) – Application Due Date: 4/30/2015
- The Resilient Electricity Delivery Infrastructure (REDI) Initiative (DE-FOA-0001219) – Application Due Date: 5/04/2014
- Flexible Hybrid Electronics Manufacturing Innovation Institute Grant (BAA-RQKM-2015-0014) – Applications due 5/29/2015
- Advanced Frontiers in Renewable Hydrogen Fuel Production via Solar Water Splitting Technologies – Letter of Intent due 10/7/2015
- Land and Water Conservation Fund State and Local Assistance Program – Application Due Date: 08/11/2015
- Thermal Transport Processed (PD-14-1406) – Application due 10/20/2015
- NEW! Energy for Sustainability (PD-14-7644) – Applications due October 20, 2015
- NEW! Biotechnology, Biochemical, and Biomass Engineering (PD-14-1491) - Applications due October 20, 2015
- NEW! Catalysis and Biocatalysis (PD-14-401) - Applications due October 20, 2015
- NEW! Energy, Power, and Adaptive Systems (PD-13-7607) –Applications due November 2, 2015
- Landscape Design for Sustainable Bioenergy Systems (DE-FOA-0001179) – Concept Paper due 11/21/2015
- Repowering Assistance Program - Ongoing
- Rural Business Enterprise Grants - Ongoing
- Rural Business Opportunity Grants – Ongoing
- Rural Energy for America Program
- Sunshot Catalyst Prize (DE-FOA-0001126) - Applications Accepted on a Continuous Basis - The U.S. Department of Energy SunShot Catalyst is an open innovation program that allows the public to rapidly create and develop products and solutions that address near-term challenges in the U.S. solar marketplace through prize challenges.
- Sustainable Agriculture Research and Education Grants - Ongoing
- Renewable Energy RFP's - Solicitations for Renewable Energy Generation, Renewable Energy Certificates, and Green Power – Various Deadlines
- U.S. Dept. of Agriculture - Rural Development Grant Assistance
- Green Refinance Plus – Ongoing
- National Science Foundation Funding Opportunities